

## SEQUENCE LISTING

&lt;110&gt; Degussa AG

&lt;120&gt; Expression of nitrile hydratases in a two-vector expression system

&lt;130&gt; 040065 AM

&lt;160&gt; 34

&lt;170&gt; PatentIn version 3.1

&lt;210&gt; 1

&lt;211&gt; 624

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus erythropolis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(624)

&lt;223&gt;

&lt;400&gt; 1

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gcg	ccg	gtc	tcc	gat	cgc	gcg	tgg	gcc	ctg	ttc	cgc	gca	ctc	gac	ggc	96
Ala	Pro	Val	Ser	Asp	Arg	Ala	Trp	Ala	Leu	Phe	Arg	Ala	Leu	Asp	Gly	
		20					25						30			

aag	gga	ttg	gta	ccc	gac	ggc	tac	gtc	gag	gga	tgg	aag	aag	acc	ttc	144
Lys	Gly	Leu	Val	Pro	Asp	Gly	Tyr	Val	Glu	Gly	Trp	Lys	Lys	Thr	Phe	
		35					40					45				

gag	gag	gac	ttc	agt	cca	agg	cgc	gga	gcg	gaa	ttg	gtc	gcg	cgg	gcg	192
Glu	Glu	Asp	Phe	Ser	Pro	Arg	Arg	Gly	Ala	Glu	Leu	Val	Ala	Arg	Ala	
	50					55					60					

tgg	acc	gac	ccc	gat	ttc	cgg	caa	ctg	ctt	ctc	acc	gac	ggc	acc	gcc	240
Trp	Thr	Asp	Pro	Asp	Phe	Arg	Gln	Leu	Leu	Leu	Thr	Asp	Gly	Thr	Ala	
65					70					75					80	

gcg	gtt	gcc	cag	tac	gga	tat	ctg	ggc	ccc	cag	ggc	gaa	tac	atc	gtg	288
Ala	Val	Ala	Gln	Tyr	Gly	Tyr	Leu	Gly	Pro	Gln	Gly	Glu	Tyr	Ile	Val	
			85						90					95		

gca	gtc	gaa	gac	acc	ccg	acc	ctc	aag	aac	gtg	atc	gtg	tgc	tcg	ctg	336
Ala	Val	Glu	Asp	Thr	Pro	Thr	Leu	Lys	Asn	Val	Ile	Val	Cys	Ser	Leu	
			100					105					110			

tgt	tca	tgc	acc	gcg	tgg	ccc	att	ctc	ggc	ctg	ccc	cct	acc	tgg	tac	384
Cys	Ser	Cys	Thr	Ala	Trp	Pro	Ile	Leu	Gly	Leu	Pro	Pro	Thr	Trp	Tyr	
		115				120						125				

aag	agt	ttc	gaa	tac	cgt	gcg	cga	gtg	gtg	cgt	gag	cca	cgg	aag	gtt	432
Lys	Ser	Phe	Glu	Tyr	Arg	Ala	Arg	Val	Val	Arg	Glu	Pro	Arg	Lys	Val	
		130				135					140					

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 145 150 155 160

tac gac acc acc gcc gaa act cgc tac atg gtt ctc ccg caa cgt ccc 528  
 Tyr Asp Thr Thr Ala Glu Thr Arg Tyr Met Val Leu Pro Gln Arg Pro  
 165 170 175

gca ggc acc gaa ggc tgg agc cag gaa cag ctt cag gag atc gtc acc 576  
 Ala Gly Thr Glu Gly Trp Ser Gln Glu Gln Leu Gln Glu Ile Val Thr  
 180 185 190

aag gac tgc ctg atc ggc gtc gca gtc ccg cag gtc ccc acc gtc tga 624  
 Lys Asp Cys Leu Ile Gly Val Ala Val Pro Gln Val Pro Thr Val  
 195 200 205

<210> 2  
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Met Ser Val Thr Ile Asp His Thr Thr Glu Asn Ala Ala Pro Ala Gln  
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Ala Pro Val Ser Asp Arg Ala Trp Ala Leu Phe Arg Ala Leu Asp Gly  
 20 25 30

Lys Gly Leu Val Pro Asp Gly Tyr Val Glu Gly Trp Lys Lys Thr Phe  
 35 40 45

Glu Glu Asp Phe Ser Pro Arg Arg Gly Ala Glu Leu Val Ala Arg Ala  
 50 55 60

Trp Thr Asp Pro Asp Phe Arg Gln Leu Leu Leu Thr Asp Gly Thr Ala  
 65 70 75 80

Ala Val Ala Gln Tyr Gly Tyr Leu Gly Pro Gln Gly Glu Tyr Ile Val  
 85 90 95

Ala Val Glu Asp Thr Pro Thr Leu Lys Asn Val Ile Val Cys Ser Leu  
 100 105 110

Cys Ser Cys Thr Ala Trp Pro Ile Leu Gly Leu Pro Pro Thr Trp Tyr  
 115 120 125

Lys Ser Phe Glu Tyr Arg Ala Arg Val Val Arg Glu Pro Arg Lys Val  
 130 135 140

Leu Phe Glu Met Gly Thr Glu Ile Ala Ser Asp Val Glu Ile Arg Val  
145 150 155 160

Tyr Asp Thr Thr Ala Glu Thr Arg Tyr Met Val Leu Pro Gln Arg Pro  
165 170 175

Ala Gly Thr Glu Gly Trp Ser Gln Glu Gln Leu Gln Glu Ile Val Thr  
180 185 190

Lys Asp Cys Leu Ile Gly Val Ala Val Pro Gln Val Pro Thr Val  
195 200 205

<210> 3  
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<212> DNA  
<213> Rhodococcus erythropolis

<220>  
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<222> (1)..(639)  
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ccg cat acc gtc aac gcc gac atc ggc ccc acc ttc cac gcc gag tgg 96  
Pro His Thr Val Asn Ala Asp Ile Gly Pro Thr Phe His Ala Glu Trp  
20 25 30  
gaa cac ctg ccg tac agc ctg atg ttc gcc ggt gtc gcc gaa ctc ggg 144  
Glu His Leu Pro Tyr Ser Leu Met Phe Ala Gly Val Ala Glu Leu Gly  
35 40 45  
gca ttc agc gtc gac gaa gtt cga tac gtc gtc gag cgg atg gaa cca 192  
Ala Phe Ser Val Asp Glu Val Arg Tyr Val Val Glu Arg Met Glu Pro  
50 55 60  
cgc cac tac atg atg acc ccg tac tac gag agg tac gtc atc ggc gtc 240  
Arg His Tyr Met Met Thr Pro Tyr Tyr Glu Arg Tyr Val Ile Gly Val  
65 70 75 80  
gcg aca ctg atg gtc gaa aag gga atc ctg acg cag gaa gaa ctc gaa 288  
Ala Thr Leu Met Val Glu Lys Gly Ile Leu Thr Gln Glu Glu Leu Glu  
85 90 95  
agc ctt gca ggg gga ccg ttc cca ctg tcg cgg ccc agc gaa tcc gaa 336  
Ser Leu Ala Gly Gly Pro Phe Pro Leu Ser Arg Pro Ser Glu Ser Glu  
100 105 110  
ggg cgg ccg gca ccc gtc gag acg acc acc ttc gaa atc ggt cag cga 384  
Gly Arg Pro Ala Pro Val Glu Thr Thr Thr Phe Glu Ile Gly Gln Arg

115						120						125						
gta	cgc	gtg	cgc	gac	gag	tac	gtt	ccg	ggg	cat	att	cga	atg	cct	gcg	432		
Val	Arg	Val	Arg	Asp	Glu	Tyr	Val	Pro	Gly	His	Ile	Arg	Met	Pro	Ala			
	130						135				140							
tac	tgc	cgc	gga	cga	gtg	gga	acc	atc	tct	cat	cgg	act	acc	gag	aag	480		
Tyr	Cys	Arg	Gly	Arg	Val	Gly	Thr	Ile	Ser	His	Arg	Thr	Thr	Glu	Lys			
	145				150					155					160			
tgg	ccg	ttt	ccc	gac	gca	atc	ggc	cac	ggg	cgc	aac	gac	gcc	ggc	gaa	528		
Trp	Pro	Phe	Pro	Asp	Ala	Ile	Gly	His	Gly	Arg	Asn	Asp	Ala	Gly	Glu			
				165					170					175				
gaa	ccg	acg	tac	cac	gtg	aag	ttc	gac	gcc	gag	gaa	ttg	ttc	ggt	agc	576		
Glu	Pro	Thr	Tyr	His	Val	Lys	Phe	Asp	Ala	Glu	Glu	Leu	Phe	Gly	Ser			
			180					185					190					
gac	acc	gac	ggc	ggc	agc	gtc	gta	gtc	gac	ctt	ttc	gag	ggt	tac	ctc	624		
Asp	Thr	Asp	Gly	Gly	Ser	Val	Val	Val	Asp	Leu	Phe	Glu	Gly	Tyr	Leu			
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gag	cct	gcg	gcc	tga												639		
Glu	Pro	Ala	Ala															
	210																	

<210> 4  
 <211> 212  
 <212> PRT  
 <213> Rhodococcus erythropolis

<400> 4

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Pro	His	Thr	Val	Asn	Ala	Asp	Ile	Gly	Pro	Thr	Phe	His	Ala	Glu	Trp
			20					25					30		
Glu	His	Leu	Pro	Tyr	Ser	Leu	Met	Phe	Ala	Gly	Val	Ala	Glu	Leu	Gly
		35					40					45			
Ala	Phe	Ser	Val	Asp	Glu	Val	Arg	Tyr	Val	Val	Glu	Arg	Met	Glu	Pro
	50					55					60				
Arg	His	Tyr	Met	Met	Thr	Pro	Tyr	Tyr	Glu	Arg	Tyr	Val	Ile	Gly	Val
65					70				75					80	
Ala	Thr	Leu	Met	Val	Glu	Lys	Gly	Ile	Leu	Thr	Gln	Glu	Glu	Leu	Glu
				85					90					95	
Ser	Leu	Ala	Gly	Gly	Pro	Phe	Pro	Leu	Ser	Arg	Pro	Ser	Glu	Ser	Glu

100	105	110
Gly Arg Pro Ala Pro Val Glu Thr Thr Thr Phe Glu Ile Gly Gln Arg 115 120 125		
Val Arg Val Arg Asp Glu Tyr Val Pro Gly His Ile Arg Met Pro Ala 130 135 140		
Tyr Cys Arg Gly Arg Val Gly Thr Ile Ser His Arg Thr Thr Glu Lys 145 150 155 160		
Trp Pro Phe Pro Asp Ala Ile Gly His Gly Arg Asn Asp Ala Gly Glu 165 170 175		
Glu Pro Thr Tyr His Val Lys Phe Asp Ala Glu Glu Leu Phe Gly Ser 180 185 190		
Asp Thr Asp Gly Gly Ser Val Val Val Asp Leu Phe Glu Gly Tyr Leu 195 200 205		
Glu Pro Ala Ala 210		

<210> 5  
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 <212> DNA  
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<220>  
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gcg ccg gtc tcc gat cgc gcg tgg gcc ctg ttc cgc gca ctc gac ggt Ala Pro Val Ser Asp Arg Ala Trp Ala Leu Phe Arg Ala Leu Asp Gly 20 25 30	96
aag gga ttg gta ccc gac ggt tac gtc gaa gga tgg aag aaa acc ttc Lys Gly Leu Val Pro Asp Gly Tyr Val Glu Gly Trp Lys Lys Thr Phe 35 40 45	144
gag gag gac ttc agt cca agg cgc gga gcg gaa ttg gtc gcg cgg gcg Glu Glu Asp Phe Ser Pro Arg Arg Gly Ala Glu Leu Val Ala Arg Ala 50 55 60	192

tgg acc gac ccc gag ttc cgg cag ttg ctt ctc acc gac ggt acc gcc	240
Trp Thr Asp Pro Glu Phe Arg Gln Leu Leu Leu Thr Asp Gly Thr Ala	
65 70 75 80	
gcg gtt gcc cag tac gga tac ctg ggc ccc cag ggc gag tac atc gtg	288
Ala Val Ala Gln Tyr Gly Tyr Leu Gly Pro Gln Gly Glu Tyr Ile Val	
85 90 95	
gca gtc gaa gac acc ccg acc ctc aag aac gtg atc gtg tgc tcg ctg	336
Ala Val Glu Asp Thr Pro Thr Leu Lys Asn Val Ile Val Cys Ser Leu	
100 105 110	
tgt tca tgc acc gcg tgg ccc att ctc ggc ctg ccc cct acc tgg tac	384
Cys Ser Cys Thr Ala Trp Pro Ile Leu Gly Leu Pro Pro Thr Trp Tyr	
115 120 125	
aag agt ttc gaa tac cgt gcg cga gtg gtg cgt gag cca cgg aag gtt	432
Lys Ser Phe Glu Tyr Arg Ala Arg Val Val Arg Glu Pro Arg Lys Val	
130 135 140	
ctc tcc gag atg gga acc gag atc gcg tcg gac gtc gag atc cgc gtc	480
Leu Ser Glu Met Gly Thr Glu Ile Ala Ser Asp Val Glu Ile Arg Val	
145 150 155 160	
tac gac acc acc gcc gaa act cgc tac atg gtt ctc ccg caa cgt ccc	528
Tyr Asp Thr Thr Ala Glu Thr Arg Tyr Met Val Leu Pro Gln Arg Pro	
165 170 175	
gca ggc acc gaa ggc tgg agc cag gaa caa ctg cag gaa atc gtc acc	576
Ala Gly Thr Glu Gly Trp Ser Gln Glu Gln Leu Gln Glu Ile Val Thr	
180 185 190	
aag gac tgc ctg atc ggc gtc gca gtc ccg cag gtc ccc acc gtc tga	624
Lys Asp Cys Leu Ile Gly Val Ala Val Pro Gln Val Pro Thr Val	
195 200 205	

<210> 6  
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 <213> Rhodococcus erythropolis

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Lys Gly Leu Val Pro Asp Gly Tyr Val Glu Gly Trp Lys Lys Thr Phe	
35 40 45	
Glu Glu Asp Phe Ser Pro Arg Arg Gly Ala Glu Leu Val Ala Arg Ala	
50 55 60	

Trp Thr Asp Pro Glu Phe Arg Gln Leu Leu Leu Thr Asp Gly Thr Ala  
65 70 75 80

Ala Val Ala Gln Tyr Gly Tyr Leu Gly Pro Gln Gly Glu Tyr Ile Val  
85 90 95

Ala Val Glu Asp Thr Pro Thr Leu Lys Asn Val Ile Val Cys Ser Leu  
100 105 110

Cys Ser Cys Thr Ala Trp Pro Ile Leu Gly Leu Pro Pro Thr Trp Tyr  
115 120 125

Lys Ser Phe Glu Tyr Arg Ala Arg Val Val Arg Glu Pro Arg Lys Val  
130 135 140

Leu Ser Glu Met Gly Thr Glu Ile Ala Ser Asp Val Glu Ile Arg Val  
145 150 155 160

Tyr Asp Thr Thr Ala Glu Thr Arg Tyr Met Val Leu Pro Gln Arg Pro  
165 170 175

Ala Gly Thr Glu Gly Trp Ser Gln Glu Gln Leu Gln Glu Ile Val Thr  
180 185 190

Lys Asp Cys Leu Ile Gly Val Ala Val Pro Gln Val Pro Thr Val  
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<212> DNA  
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<220>  
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<222> (1)..(639)  
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ccg cat acc gtc aac gcc gac atc ggc ccc acc ttc cac gcc gag tgg 96  
Pro His Thr Val Asn Ala Asp Ile Gly Pro Thr Phe His Ala Glu Trp  
20 25 30

gaa cac ctg ccg tac agc ctg atg ttc gcc ggt gtc gcc gaa ctc ggg 144  
Glu His Leu Pro Tyr Ser Leu Met Phe Ala Gly Val Ala Glu Leu Gly

35	40	45	
gca ttc agc gtc gac gaa gtt cga tac gtc gtc gag cgg atg gaa cca			192
Ala Phe Ser Val Asp Glu Val Arg Tyr Val Val Glu Arg Met Glu Pro			
50	55	60	
cgc cac tac atg atg acc ccg tac tac gag agg tac gtc atc ggc gtc			240
Arg His Tyr Met Met Thr Pro Tyr Tyr Glu Arg Tyr Val Ile Gly Val			
65	70	75	80
gcg aca ctg atg gtc gaa aag gga atc ctg acg cag gat gaa ctc gaa			288
Ala Thr Leu Met Val Glu Lys Gly Ile Leu Thr Gln Asp Glu Leu Glu			
	85	90	95
agc ctt gca ggg gga ccg ttc cca ctg tcg cgg ccc agc gaa tcc gaa			336
Ser Leu Ala Gly Gly Pro Phe Pro Leu Ser Arg Pro Ser Glu Ser Glu			
	100	105	110
ggg cgt ccg gca ccc gtc gag acg acc acc ttc gaa atc ggt cag cga			384
Gly Arg Pro Ala Pro Val Glu Thr Thr Thr Phe Glu Ile Gly Gln Arg			
	115	120	125
gta cgc gtg cgc gac gag tac gtt ccg ggg cat att cga atg cct gcg			432
Val Arg Val Arg Asp Glu Tyr Val Pro Gly His Ile Arg Met Pro Ala			
	130	135	140
tac tgc cgc gga cga gtg gga acc atc tct cat cgg act acc gag aag			480
Tyr Cys Arg Gly Arg Val Gly Thr Ile Ser His Arg Thr Thr Glu Lys			
	145	150	155
tgg cca ttt ccc gac gca atc ggc cac ggg cgc aac gac gcc ggc gaa			528
Trp Pro Phe Pro Asp Ala Ile Gly His Gly Arg Asn Asp Ala Gly Glu			
	165	170	175
gaa ccg acg tac cac gtg aag ttc gcc gcc gag gaa ttg ttc ggt agc			576
Glu Pro Thr Tyr His Val Lys Phe Ala Ala Glu Glu Leu Phe Gly Ser			
	180	185	190
gac acc gac ggc ggc agc gtc gta gtc gac ctt ttc gag ggt tac ctc			624
Asp Thr Asp Gly Gly Ser Val Val Val Asp Leu Phe Glu Gly Tyr Leu			
	195	200	205
gag cct gcg gcc tga			639
Glu Pro Ala Ala			
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<210> 8  
 <211> 212  
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 <213> Rhodococcus erythropolis

<400> 8

Met Asp Gly Val His Asp Leu Ala Gly Val Gln Gly Phe Gly Lys Val
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Pro His Thr Val Asn Ala Asp Ile Gly Pro Thr Phe His Ala Glu Trp



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Ala	Phe	Ser	Val	Asp	Glu	Val	Arg	Tyr	Val	Val	Glu	Arg	Met	Glu	Pro															
	50					55					60																			
Arg	His	Tyr	Met	Met	Thr	Pro	Tyr	Tyr	Glu	Arg	Tyr	Val	Ile	Gly	Val															
65					70					75				80																
Ala	Thr	Leu	Met	Val	Glu	Lys	Gly	Ile	Leu	Thr	Gln	Asp	Glu	Leu	Glu															
				85					90					95																
Ser	Leu	Ala	Gly	Gly	Pro	Phe	Pro	Leu	Ser	Arg	Pro	Ser	Glu	Ser	Glu															
		100					105						110																	
Gly	Arg	Pro	Ala	Pro	Val	Glu	Thr	Thr	Thr	Phe	Glu	Ile	Gly	Gln	Arg															
		115					120					125																		
Val	Arg	Val	Arg	Asp	Glu	Tyr	Val	Pro	Gly	His	Ile	Arg	Met	Pro	Ala															
	130					135					140																			
Tyr	Cys	Arg	Gly	Arg	Val	Gly	Thr	Ile	Ser	His	Arg	Thr	Thr	Glu	Lys															
145					150				155					160																
Trp	Pro	Phe	Pro	Asp	Ala	Ile	Gly	His	Gly	Arg	Asn	Asp	Ala	Gly	Glu															
				165				170						175																
Glu	Pro	Thr	Tyr	His	Val	Lys	Phe	Ala	Ala	Glu	Glu	Leu	Phe	Gly	Ser															
		180					185						190																	
Asp	Thr	Asp	Gly	Gly	Ser	Val	Val	Val	Asp	Leu	Phe	Glu	Gly	Tyr	Leu															
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<210> 9  
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&lt;400&gt; 9

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gcg ccg gtc tcc gac cgg gcg tgg gcc ctg ttc cgc gca ctc gac ggt	96
Ala Pro Val Ser Asp Arg Ala Trp Ala Leu Phe Arg Ala Leu Asp Gly	
20 25 30	
aag gga ttg gta ccc gac ggt tac gtc gag gga tgg aag aag acc ttc	1 44
Lys Gly Leu Val Pro Asp Gly Tyr Val Glu Gly Trp Lys Lys Thr Phe	
35 40 45	
gag gag gac ttc agt cca agg cgc gga gcg gaa ttg gtc gcg cgg gcg	1 92
Glu Glu Asp Phe Ser Pro Arg Arg Gly Ala Glu Leu Val Ala Arg Ala	
50 55 60	
tgg acc gac ccc gag ttc cgg cag ttg ctt ctc acc gac ggt acc gcc	2 40
Trp Thr Asp Pro Glu Phe Arg Gln Leu Leu Leu Thr Asp Gly Thr Ala	
65 70 75 80	
gcg gtt gcc cag tac gga tat ctg ggc ccc cag ggc gag tac atc gtg	2 88
Ala Val Ala Gln Tyr Gly Tyr Leu Gly Pro Gln Gly Glu Tyr Ile Val	
85 90 95	
gca gtc gaa gac acc ccg acc ctc aag aac gtg atc gtg tgc tcg ttg	3 36
Ala Val Glu Asp Thr Pro Thr Leu Lys Asn Val Ile Val Cys Ser Leu	
100 105 110	
tgt tca tgc acc gcg tgg ccc att ctc ggc ctg ccc cct acc tgg tac	3 84
Cys Ser Cys Thr Ala Trp Pro Ile Leu Gly Leu Pro Pro Thr Trp Tyr	
115 120 125	
aag agt ttc gaa tac cgt gcg cga gtg gtg cgt gag cca ccg aag gtt	4 32
Lys Ser Phe Glu Tyr Arg Ala Arg Val Val Arg Glu Pro Arg Lys Val	
130 135 140	
ctc tcc gag atg gga acc gag atc gcg tcg gac gtc gag atc cgc gtc	4 80
Leu Ser Glu Met Gly Thr Glu Ile Ala Ser Asp Val Glu Ile Arg Val	
145 150 155 160	
tac gac acc acc gcc gaa act cgc tac atg gtt ctc ccg caa cgt ccc	52 8
Tyr Asp Thr Thr Ala Glu Thr Arg Tyr Met Val Leu Pro Gln Arg Pro	
165 170 175	
gca ggc acc gaa ggc tgg agc cag gaa cag ctt caa gag atc gtc acc	57 6
Ala Gly Thr Glu Gly Trp Ser Gln Glu Gln Leu Gln Glu Ile Val Thr	
180 185 190	
aag gac tgc ctg atc ggc gtc gca gtc ccg cag gtc ccc acc gtc tga	62 4
Lys Asp Cys Leu Ile Gly Val Ala Val Pro Gln Val Pro Thr Val	
195 200 205	

&lt;210&gt; 10

&lt;211&gt; 207

&lt;212&gt; PRT

&lt;213&gt; Rhodococcus erythropolis

&lt;400&gt; 10

Met Ser Val Thr Ile Asp His Thr Thr Glu Asn Ala Ala Pro Ala Gln  
 1 5 10 15

Ala Pro Val Ser Asp Arg Ala Trp Ala Leu Phe Arg Ala Leu Asp Gly  
 20 25 30

Lys Gly Leu Val Pro Asp Gly Tyr Val Glu Gly Trp Lys Lys Thr Phe  
 35 40 45

Glu Glu Asp Phe Ser Pro Arg Arg Gly Ala Glu Leu Val Ala Arg Ala  
 50 55 60

Trp Thr Asp Pro Glu Phe Arg Gln Leu Leu Leu Thr Asp Gly Thr Ala  
 65 70 75 80

Ala Val Ala Gln Tyr Gly Tyr Leu Gly Pro Gln Gly Glu Tyr Ile Val  
 85 90 95

Ala Val Glu Asp Thr Pro Thr Leu Lys Asn Val Ile Val Cys Ser Leu  
 100 105 110

Cys Ser Cys Thr Ala Trp Pro Ile Leu Gly Leu Pro Pro Thr Trp Tyr  
 115 120 125

Lys Ser Phe Glu Tyr Arg Ala Arg Val Val Arg Glu Pro Arg Lys Val  
 130 135 140

Leu Ser Glu Met Gly Thr Glu Ile Ala Ser Asp Val Glu Ile Arg Val  
 145 150 155 160

Tyr Asp Thr Thr Ala Glu Thr Arg Tyr Met Val Leu Pro Gln Arg Pro  
 165 170 175

Ala Gly Thr Glu Gly Trp Ser Gln Glu Gln Leu Gln Glu Ile Val Thr  
 180 185 190

Lys Asp Cys Leu Ile Gly Val Ala Val Pro Gln Val Pro Thr Val  
 195 200 205

&lt;210&gt; 11

&lt;211&gt; 639

&lt;212&gt; DNA

&lt;213&gt; Rhodococcus erythropolis

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(639)

&lt;223&gt;

&lt;400&gt; 11

atg gat gga gta cac gat ctt gcc gga gtt caa ggc ttc ggc aaa gtc	48
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1 5 10 15	
ccg cat acc gtc aac gcc gac atc ggc ccc acc ttc cac gcc gag tgg	96
Pro His Thr Val Asn Ala Asp Ile Gly Pro Thr Phe His Ala Glu Trp	
20 25 30	
gaa cac ctg ccg tac agc ctg atg ttc gcc ggt gtc gcc gaa ctc ggg	144
Glu His Leu Pro Tyr Ser Leu Met Phe Ala Gly Val Ala Glu Leu Gly	
35 40 45	
gca ttc agc gtc gac gaa gtt cga tac gtc gtc gag cgg atg gaa cca	192
Ala Phe Ser Val Asp Glu Val Arg Tyr Val Val Glu Arg Met Glu Pro	
50 55 60	
cgc cac tac atg atg acc ccg tac tac gag agg tac gtc atc ggc gtc	240
Arg His Tyr Met Met Thr Pro Tyr Tyr Glu Arg Tyr Val Ile Gly Val	
65 70 75 80	
gcg aca ctg atg gtc gaa aag gga atc ctg acg cag gaa gaa ctc gaa	288
Ala Thr Leu Met Val Glu Lys Gly Ile Leu Thr Gln Glu Glu Leu Glu	
85 90 95	
agc ctt gca ggg gga ccg ttc cca ctg tcg ccg cca agc gaa tcc gaa	336
Ser Leu Ala Gly Gly Pro Phe Pro Leu Ser Arg Pro Ser Glu Ser Glu	
100 105 110	
ggg cgt ccg gca ccc gtc gag acg acc acc ttc gaa gtc ggt cag cga	384
Gly Arg Pro Ala Pro Val Glu Thr Thr Thr Phe Glu Val Gly Gln Arg	
115 120 125	
gta cgc gtg cgc gac gag tac gtt ccg ggg cat att cga atg cct gcg	432
Val Arg Val Arg Asp Glu Tyr Val Pro Gly His Ile Arg Met Pro Ala	
130 135 140	
tac tgc cgc gga cga gtg gga acc atc tct cat ccg act acc gag aag	480
Tyr Cys Arg Gly Arg Val Gly Thr Ile Ser His Arg Thr Thr Glu Lys	
145 150 155 160	
tgg cca ttt ccc gac gca atc ggc cac ggg cgc aac gac gcc ggc gaa	528
Trp Pro Phe Pro Asp Ala Ile Gly His Gly Arg Asn Asp Ala Gly Glu	
165 170 175	
gaa ccg acg tac cac gtg aag ttc gac gcc gag gaa ttg ttc ggt agc	576
Glu Pro Thr Tyr His Val Lys Phe Asp Ala Glu Glu Leu Phe Gly Ser	
180 185 190	
gac acc gac ggc ggc agc gtc gta gtc gac ctt ttc gag ggt tac ctc	624
Asp Thr Asp Gly Gly Ser Val Val Val Asp Leu Phe Glu Gly Tyr Leu	
195 200 205	

gag cct gcg gcc tga  
 Glu Pro Ala Ala  
 210

639

<210> 12  
 <211> 212  
 <212> PRT  
 <213> Rhodococcus erythropolis

<400> 12

Met Asp Gly Val His Asp Leu Ala Gly Val Gln Gly Phe Gly Lys Val  
 1 5 10 15

Pro His Thr Val Asn Ala Asp Ile Gly Pro Thr Phe His Ala Glu Trp  
 20 25 30

Glu His Leu Pro Tyr Ser Leu Met Phe Ala Gly Val Ala Glu Leu Gly  
 35 40 45

Ala Phe Ser Val Asp Glu Val Arg Tyr Val Val Glu Arg Met Glu Pro  
 50 55 60

Arg His Tyr Met Met Thr Pro Tyr Tyr Glu Arg Tyr Val Ile Gly Val  
 65 70 75 80

Ala Thr Leu Met Val Glu Lys Gly Ile Leu Thr Gln Glu Glu Leu Glu  
 85 90 95

Ser Leu Ala Gly Gly Pro Phe Pro Leu Ser Arg Pro Ser Glu Ser Glu  
 100 105 110

Gly Arg Pro Ala Pro Val Glu Thr Thr Thr Phe Glu Val Gly Gln Arg  
 115 120 125

Val Arg Val Arg Asp Glu Tyr Val Pro Gly His Ile Arg Met Pro Ala  
 130 135 140

Tyr Cys Arg Gly Arg Val Gly Thr Ile Ser His Arg Thr Thr Glu Lys  
 145 150 155 160

Trp Pro Phe Pro Asp Ala Ile Gly His Gly Arg Asn Asp Ala Gly Glu  
 165 170 175

Glu Pro Thr Tyr His Val Lys Phe Asp Ala Glu Glu Leu Phe Gly Ser  
 180 185 190

Asp Thr Asp Gly Gly Ser Val Val Val Asp Leu Phe Glu Gly Tyr Leu  
 195 200 205

Glu Pro Ala Ala  
 210

<210> 13  
 <211> 612  
 <212> DNA  
 <213> Rhodococcus erythropolis

<220>  
 <221> CDS  
 <222> (1)..(612)  
 <223>

<400> 13  
 gtg agc gag cac gtc aat aag tac acg gag tac gag gca cgt acc aag 48  
 Val Ser Glu His Val Asn Lys Tyr Thr Glu Tyr Glu Ala Arg Thr Lys  
 1 5 10 15  
 gca atc gaa act ttg ctg tac gag cga ggg ctc atc acg ccc gcc gcg 96  
 Ala Ile Glu Thr Leu Leu Tyr Glu Arg Gly Leu Ile Thr Pro Ala Ala  
 20 25 30  
 gtc gac cga gtc gtt tcg tac tac gag aac gag atc ggc ccg atg ggc 144  
 Val Asp Arg Val Val Ser Tyr Tyr Glu Asn Glu Ile Gly Pro Met Gly  
 35 40 45  
 ggt gcc aag gtc gtg gcg aag tcc tgg gtg gac cct gag tac cgc aag 192  
 Gly Ala Lys Val Val Ala Lys Ser Trp Val Asp Pro Glu Tyr Arg Lys  
 50 55 60  
 tgg ctc gaa gag gac gcg acg gcc gcg atg gcg tca ttg ggc tat gcc 240  
 Trp Leu Glu Glu Asp Ala Thr Ala Ala Met Ala Ser Leu Gly Tyr Ala  
 65 70 75 80  
 ggt gag cag gca cac caa att tcg gcg gtc ttc aac gac tcc caa acg 288  
 Gly Glu Gln Ala His Gln Ile Ser Ala Val Phe Asn Asp Ser Gln Thr  
 85 90 95  
 cat cac gtg gtg gtg tgc act ctg tgt tcg tgc tat ccg tgg ccg gtg 336  
 His His Val Val Val Cys Thr Leu Cys Ser Cys Tyr Pro Trp Pro Val  
 100 105 110  
 ctt ggt ctc ccg ccc gcc tgg tac aag agc atg gag tac ccg tcc cga 384  
 Leu Gly Leu Pro Pro Ala Trp Tyr Lys Ser Met Glu Tyr Arg Ser Arg  
 115 120 125  
 gtg gta gcg gac cct cgt gga gtg ctc aag cgc gat ttc ggt ttc gac 432  
 Val Val Ala Asp Pro Arg Gly Val Leu Lys Arg Asp Phe Gly Phe Asp  
 130 135 140  
 atc ccc gat gag gtg gag gtc agg gtt tgg gac agc agc tcc gaa atc 480  
 Ile Pro Asp Glu Val Glu Val Arg Val Trp Asp Ser Ser Ser Glu Ile

15

145		150		155		160	
cgc tac atc gtc atc ccg gaa cgg ccg gcc ggc acc gac ggt tgg tcc							528
Arg Tyr Ile Val Ile Pro Glu Arg Pro Ala Gly Thr Asp Gly Trp Ser							
		165		170		175	
gag gac gag ctg gcg aag ctg gtg agt cgg gac tcg atg atc ggt gtc							576
Glu Asp Glu Leu Ala Lys Leu Val Ser Arg Asp Ser Met Ile Gly Val							
		180		185		190	
agt aat gcg ctc aca ccc cag gaa gtg atc gta tga							612
Ser Asn Ala Leu Thr Pro Gln Glu Val Ile Val							
		195		200			

<210> 14  
 <211> 203  
 <212> PRT  
 <213> *Rhodococcus erythropolis*  
 <400> 14

Val Ser Glu His Val Asn Lys Tyr Thr Glu Tyr Glu Ala Arg Thr Lys
1 5 10 15

Ala Ile Glu Thr Leu Leu Tyr Glu Arg Gly Leu Ile Thr Pro Ala Ala
20 25 30

Val Asp Arg Val Val Ser Tyr Tyr Glu Asn Glu Ile Gly Pro Met Gly
35 40 45

Gly Ala Lys Val Val Ala Lys Ser Trp Val Asp Pro Glu Tyr Arg Lys
50 55 60

Trp Leu Glu Glu Asp Ala Thr Ala Ala Met Ala Ser Leu Gly Tyr Ala
65 70 75 80

Gly Glu Gln Ala His Gln Ile Ser Ala Val Phe Asn Asp Ser Gln Thr
85 90 95

His His Val Val Val Cys Thr Leu Cys Ser Cys Tyr Pro Trp Pro Val
100 105 110

Leu Gly Leu Pro Pro Ala Trp Tyr Lys Ser Met Glu Tyr Arg Ser Arg
115 120 125

Val Val Ala Asp Pro Arg Gly Val Leu Lys Arg Asp Phe Gly Phe Asp
130 135 140

Ile Pro Asp Glu Val Glu Val Arg Val Trp Asp Ser Ser Ser Glu Ile
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145 150 155 160

Arg Tyr Ile Val Ile Pro Glu Arg Pro Ala Gly Thr Asp Gly Trp Ser  
165 170 175

Glu Asp Glu Leu Ala Lys Leu Val Ser Arg Asp Ser Met Ile Gly Val  
180 185 190

Ser Asn Ala Leu Thr Pro Gln Glu Val Ile Val  
195 200

<210> 15  
<211> 690  
<212> DNA  
<213> Rhodococcus erythropolis

<220>  
<221> CDS  
<222> (1) .. (690)  
<223>

<400> 15  
atg gat ggt atc cac gac aca ggc ggc atg acc gga tac gga ccg gtc 48  
Met Asp Gly Ile His Asp Thr Gly Gly Met Thr Gly Tyr Gly Pro Val  
1 5 10 15

ccc tat cag aag gac gag ccc ttc ttc cac tac gag tgg gag ggt cgg 96  
Pro Tyr Gln Lys Asp Glu Pro Phe Phe His Tyr Glu Trp Glu Gly Arg  
20 25 30

acc ctg tcg att ctg acc tgg atg cat ctc aag ggc atg tcg tgg tgg 144  
Thr Leu Ser Ile Leu Thr Trp Met His Leu Lys Gly Met Ser Trp Trp  
35 40 45

gac aag tcg cgg ttc ttc cgg gag tcg atg ggg aac gaa aac tac gtc 192  
Asp Lys Ser Arg Phe Phe Arg Glu Ser Met Gly Asn Glu Asn Tyr Val  
50 55 60

aac gag att cgc aac tcg tac tac acc cac tgg ctg agt gcg gca gaa 240  
Asn Glu Ile Arg Asn Ser Tyr Tyr Thr His Trp Leu Ser Ala Ala Glu  
65 70 75 80

cgt atc ctc gtc gcc gac aag atc atc acc gaa gaa gag cga aag cac 288  
Arg Ile Leu Val Ala Asp Lys Ile Ile Thr Glu Glu Glu Arg Lys His  
85 90 95

cgt gtg cag gag atc ctc gag ggt cgg tac acg gac agg aac ccg tcg 336  
Arg Val Gln Glu Ile Leu Glu Gly Arg Tyr Thr Asp Arg Asn Pro Ser  
100 105 110

cgg aag ttc gat ccg gcc gag atc gag aag gcg atc gaa cgg ctt cac 384  
Arg Lys Phe Asp Pro Ala Glu Ile Glu Lys Ala Ile Glu Arg Leu His  
115 120 125



gag ccc cac tcc cta gca ctt cca gga gcg gag ccg agt ttc tcc ctc 432  
 Glu Pro His Ser Leu Ala Leu Pro Gly Ala Glu Pro Ser Phe Ser Leu  
 130 135 140

ggt gac aag gtc aaa gtg aag aat atg aac ccg ctg gga cac aca cgg 480  
 Gly Asp Lys Val Lys Val Lys Asn Met Asn Pro Leu Gly His Thr Arg  
 145 150 155 160

tgc ccg aaa tat gtg cgg aac aag atc ggg gaa atc gtc acc tcc cac 528  
 Cys Pro Lys Tyr Val Arg Asn Lys Ile Gly Glu Ile Val Thr Ser His  
 165 170 175

ggc tgc cag atc tat ccc gag agc agc tcc gcc ggc ctc ggc gac gat 576  
 Gly Cys Gln Ile Tyr Pro Glu Ser Ser Ser Ala Gly Leu Gly Asp Asp  
 180 185 190

ccc cgc ccg ctc tac acg gtc gcg ttt tcc gcc cag gaa ctg tgg ggc 624  
 Pro Arg Pro Leu Tyr Thr Val Ala Phe Ser Ala Gln Glu Leu Trp Gly  
 195 200 205

gac gac gga aac ggg aaa gac gta gtg tgc gtc gat ctc tgg gaa ccg 672  
 Asp Asp Gly Asn Gly Lys Asp Val Val Cys Val Asp Leu Trp Glu Pro  
 210 215 220

tac ctg atc tct gcg tga 690  
 Tyr Leu Ile Ser Ala  
 225

<210> 16  
 <211> 229  
 <212> PRT  
 <213> *Rhodococcus erythropolis*

<400> 16

Met Asp Gly Ile His Asp Thr Gly Gly Met Thr Gly Tyr Gly Pro Val  
 1 5 10 15

Pro Tyr Gln Lys Asp Glu Pro Phe Phe His Tyr Glu Trp Glu Gly Arg  
 20 25 30

Thr Leu Ser Ile Leu Thr Trp Met His Leu Lys Gly Met Ser Trp Trp  
 35 40 45

Asp Lys Ser Arg Phe Phe Arg Glu Ser Met Gly Asn Glu Asn Tyr Val  
 50 55 60

Asn Glu Ile Arg Asn Ser Tyr Tyr Thr His Trp Leu Ser Ala Ala Glu  
 65 70 75 80

Arg Ile Leu Val Ala Asp Lys Ile Ile Thr Glu Glu Glu Arg Lys His  
 85 90 95

18

Arg Val Gln Glu Ile Leu Glu Gly Arg Tyr Thr Asp Arg Asn Pro Ser  
100 105 110

Arg Lys Phe Asp Pro Ala Glu Ile Glu Lys Ala Ile Glu Arg Leu His  
115 120 125

Glu Pro His Ser Leu Ala Leu Pro Gly Ala Glu Pro Ser Phe Ser Leu  
130 135 140

Gly Asp Lys Val Lys Val Lys Asn Met Asn Pro Leu Gly His Thr Arg  
145 150 155 160

Cys Pro Lys Tyr Val Arg Asn Lys Ile Gly Glu Ile Val Thr Ser His  
165 170 175

Gly Cys Gln Ile Tyr Pro Glu Ser Ser Ser Ala Gly Leu Gly Asp Asp  
180 185 190

Pro Arg Pro Leu Tyr Thr Val Ala Phe Ser Ala Gln Glu Leu Trp Gly  
195 200 205

Asp Asp Gly Asn Gly Lys Asp Val Val Cys Val Asp Leu Trp Glu Pro  
210 215 220

Tyr Leu Ile Ser Ala  
225

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<220>  
<223> Primer

<400> 17  
gcccgcataa gaaaaggtga ac

22

<210> 18  
<211> 21  
<212> DNA  
<213> Artificial

<220>  
<223> Primer

<400> 18

gcatgccttc aaatcagcct g

21

<210> 19

<211> 24

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 19

aggggtgaacc atatgtcagt aacg

24

<210> 20

<211> 22

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 20

tgtcggatcc atcagacggt gg

22

<210> 21

<211> 23

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 21

agcaccatat ggatggagta cac

23

<210> 22

<211> 21

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 22

gttgggaatt caggccgcag g

21

<210> 23

<211> 27

<212> DNA

<213> Artificial

<220>

<223> Primer

<400> 23  
cgcggatcca agaaggagat atacatg

27

<210> 24  
<211> 22  
<212> DNA  
<213> Artificial

<220>  
<223> Primer

<400> 24  
ccgcaacggtt caaacggtct gg

22

<210> 25  
<211> 27  
<212> DNA  
<213> Artificial

<220>  
<223> Primer

<400> 25  
aggaatacgc atatgagcga gcacgtc

27

<210> 26  
<211> 30  
<212> DNA  
<213> Artificial

<220>  
<223> Primer

<400> 26  
gtgtggatcc actcatacga tcacttctg

30

<210> 27  
<211> 31  
<212> DNA  
<213> Artificial

<220>  
<223> Primer

<400> 27  
aggaatgagc atatggatgg tatccacgac a

31

<210> 28  
<211> 33  
<212> DNA  
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<220>  
<223> Primer

<400> 28  
 atcgggatcc tttcacgcag agatcaggta cgg 33

<210> 29  
 <211> 35  
 <212> DNA  
 <213> Artificial

<220>  
 <223> Primer

<400> 29  
 ctcaggatcc aaggagtgat cgtatgagtg aagac 35

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 <211> 26  
 <212> DNA  
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<220>  
 <223> Primer

<400> 30  
 acaggagctc tcagtcgatg atggcc 26

<210> 31  
 <211> 315  
 <212> DNA  
 <213> Rhodococcus erythropolis

<220>  
 <221> CDS  
 <222> (1)..(315)  
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<400> 31  
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 Met Ser Glu Asp Thr Leu Thr Asp Arg Leu Pro Ala Thr Gly Thr Ala  
 1 5 10 15

gca ccg ccc cgc gac aat ggc gag ctt gta ttc acc gag cct tgg gaa 96  
 Ala Pro Pro Arg Asp Asn Gly Glu Leu Val Phe Thr Glu Pro Trp Glu  
 20 25 30

gca acg gca ttc ggg gtc gcc atc gcg ctt tcg gat cag aag tcg tac 144  
 Ala Thr Ala Phe Gly Val Ala Ile Ala Leu Ser Asp Gln Lys Ser Tyr  
 35 40 45

gaa tgg gag ttc ttc cga cag cgt ctc att cac tcc atc gct gag gcc 192  
 Glu Trp Glu Phe Phe Arg Gln Arg Leu Ile His Ser Ile Ala Glu Ala  
 50 55 60

aac ggt tgc gag gca tac tac gag agc tgg aca aag gcg ctc gag gcc 240  
 Asn Gly Cys Glu Ala Tyr Tyr Glu Ser Trp Thr Lys Ala Leu Glu Ala  
 65 70 75 80

22

agc gtg gtc gac tcg ggg ctg atc agc gaa gat gag atc cgc gag cgc 288  
 Ser Val Val Asp Ser Gly Leu Ile Ser Glu Asp Glu Ile Arg Glu Arg  
                   85                  90                  95

atg gaa tcg atg gcc atc atc gac tga 315  
 Met Glu Ser Met Ala Ile Ile Asp  
                   100

<210> 32  
 <211> 104  
 <212> PRT  
 <213> Rhodococcus erythropolis

<400> 32

Met Ser Glu Asp Thr Leu Thr Asp Arg Leu Pro Ala Thr Gly Thr Ala  
 1                  5                  10                  15

Ala Pro Pro Arg Asp Asn Gly Glu Leu Val Phe Thr Glu Pro Trp Glu  
                   20                  25                  30

Ala Thr Ala Phe Gly Val Ala Ile Ala Leu Ser Asp Gln Lys Ser Tyr  
                   35                  40                  45

Glu Trp Glu Phe Phe Arg Gln Arg Leu Ile His Ser Ile Ala Glu Ala  
                   50                  55                  60

Asn Gly Cys Glu Ala Tyr Tyr Glu Ser Trp Thr Lys Ala Leu Glu Ala  
 65                  70                  75                  80

Ser Val Val Asp Ser Gly Leu Ile Ser Glu Asp Glu Ile Arg Glu Arg  
                   85                  90                  95

Met Glu Ser Met Ala Ile Ile Asp  
                   100

<210> 33  
 <211> 1200  
 <212> DNA  
 <213> Rhodococcus erythropolis

<220>  
 <221> CDS  
 <222> (1) .. (1200)  
 <223>

<400> 33

atg gtc gac aca cga ctt ccg gtc acg gtg ctg tca ggt ttc ctg ggc 48  
 Met Val Asp Thr Arg Leu Pro Val Thr Val Leu Ser Gly Phe Leu Gly  
 1                  5                  10                  15

gcc	ggg	aag	acg	aca	cta	ctc	aac	gag	atc	ctg	cga	aat	cga	gag	ggt	96
Ala	Gly	Lys	Thr	Thr	Leu	Leu	Asn	Glu	Ile	Leu	Arg	Asn	Arg	Glu	Gly	
			20					25					30			
cgg	cgg	gtc	gcg	gtg	atc	gtc	aac	gac	atg	agc	gaa	atc	aac	atc	gac	144
Arg	Arg	Val	Ala	Val	Ile	Val	Asn	Asp	Met	Ser	Glu	Ile	Asn	Ile	Asp	
		35					40					45				
agt	gca	gaa	gtc	gag	cgt	gag	atc	tcg	ctc	agt	cgc	tcc	gag	gag	aaa	192
Ser	Ala	Glu	Val	Glu	Arg	Glu	Ile	Ser	Leu	Ser	Arg	Ser	Glu	Glu	Lys	
	50					55					60					
ctg	gtc	gag	atg	acc	aac	ggc	tgc	atc	tgc	tgc	act	ctg	cga	gag	gat	240
Leu	Val	Glu	Met	Thr	Asn	Gly	Cys	Ile	Cys	Cys	Thr	Leu	Arg	Glu	Asp	
65					70				75						80	
ctt	ctt	tcc	gag	atc	agc	gcc	ttg	gcc	gcc	gat	ggc	cga	ttc	gac	tac	288
Leu	Leu	Ser	Glu	Ile	Ser	Ala	Leu	Ala	Ala	Asp	Gly	Arg	Phe	Asp	Tyr	
				85				90						95		
cta	ctc	atc	gaa	tct	tcg	ggc	atc	tcc	gaa	ccg	ctt	ccc	gtc	gca	gag	336
Leu	Leu	Ile	Glu	Ser	Ser	Gly	Ile	Ser	Glu	Pro	Leu	Pro	Val	Ala	Glu	
			100					105					110			
acg	ttc	aca	ttc	atc	gat	acc	gac	ggc	cac	gcc	ctc	gcc	gac	gtc	gcc	384
Thr	Phe	Thr	Phe	Ile	Asp	Thr	Asp	Gly	His	Ala	Leu	Ala	Asp	Val	Ala	
		115					120					125				
cga	ctc	gac	acc	atg	gtc	acc	gtc	gtc	gac	ggc	cac	agt	ttt	ctg	cgc	432
Arg	Leu	Asp	Thr	Met	Val	Thr	Val	Val	Asp	Gly	His	Ser	Phe	Leu	Arg	
	130					135					140					
gac	tac	acg	gct	ggg	ggc	cgc	gtc	gaa	gcc	gat	gcc	ccg	gaa	gac	gaa	480
Asp	Tyr	Thr	Ala	Gly	Gly	Arg	Val	Glu	Ala	Asp	Ala	Pro	Glu	Asp	Glu	
145				150				155							160	
cga	gac	atc	gcg	gat	ctg	ctt	gtc	gat	cag	atc	gaa	ttt	gcc	gac	gtc	528
Arg	Asp	Ile	Ala	Asp	Leu	Leu	Val	Asp	Gln	Ile	Glu	Phe	Ala	Asp	Val	
				165				170						175		
atc	ctg	gtg	agc	aag	gcc	gat	ctc	gtc	tcg	cac	cag	cac	ctg	gtc	gaa	576
Ile	Leu	Val	Ser	Lys	Ala	Asp	Leu	Val	Ser	His	Gln	His	Leu	Val	Glu	
			180					185					190			
ttg	acc	gca	gtc	ctg	cgc	tct	ttg	aac	gca	tcc	gct	gcg	ata	gtt	ccg	624
Leu	Thr	Ala	Val	Leu	Arg	Ser	Leu	Asn	Ala	Ser	Ala	Ala	Ile	Val	Pro	
		195					200					205				
atg	acg	ctc	ggt	cgc	atc	cca	ctc	gac	acg	att	ctc	gac	acc	ggt	ttg	672
Met	Thr	Leu	Gly	Arg	Ile	Pro	Leu	Asp	Thr	Ile	Leu	Asp	Thr	Gly	Leu	
	210					215					220					
ttc	tcg	ctc	gaa	aag	gct	gca	cag	gcc	ccc	gga	tgg	tta	caa	gaa	ctc	720
Phe	Ser	Leu	Glu	Lys	Ala	Ala	Gln	Ala	Pro	Gly	Trp	Leu	Gln	Glu	Leu	
225					230					235					240	
caa	ggt	gaa	cac	atc	ccc	gaa	acc	gaa	gag	tac	gga	atc	agt	tcg	gtg	768
Gln	Gly	Glu	His	Ile	Pro	Glu	Thr	Glu	Glu	Tyr	Gly	Ile	Ser	Ser	Val	

24

245								250				255				
gtg	tac	cgc	gag	cgc	gca	ccc	ttc	cac	ccc	caa	cgg	ctg	cat	gat	ttc	816
Val	Tyr	Arg	Glu	Arg	Ala	Pro	Phe	His	Pro	Gln	Arg	Leu	His	Asp	Phe	
			260					265					270			
ctc	agc	agc	gag	tgg	acc	aac	gga	aag	tta	ctt	cgg	gcc	aag	ggc	tac	864
Leu	Ser	Ser	Glu	Trp	Thr	Asn	Gly	Lys	Leu	Leu	Arg	Ala	Lys	Gly	Tyr	
			275				280					285				
tac	tgg	aat	gcc	ggc	cgg	ttc	acc	gag	atc	ggg	agt	att	tct	cag	gcc	912
Tyr	Trp	Asn	Ala	Gly	Arg	Phe	Thr	Glu	Ile	Gly	Ser	Ile	Ser	Gln	Ala	
			290			295					300					
ggt	cat	ctc	att	cgc	cac	gga	tac	gtc	ggc	cgt	tgg	tgg	aag	ttt	cta	960
Gly	His	Leu	Ile	Arg	His	Gly	Tyr	Val	Gly	Arg	Trp	Trp	Lys	Phe	Leu	
					310					315					320	
ccc	cgt	gac	gag	tgg	ccg	gcc	gac	gat	tac	cgt	cgt	gac	gga	atc	ctc	1008
Pro	Arg	Asp	Glu	Trp	Pro	Ala	Asp	Asp	Tyr	Arg	Arg	Asp	Gly	Ile	Leu	
				325					330					335		
gac	aag	tgg	gaa	gaa	ccc	gtc	gga	gac	tgc	cga	caa	gaa	ctc	gtc	ttc	1056
Asp	Lys	Trp	Glu	Glu	Pro	Val	Gly	Asp	Cys	Arg	Gln	Glu	Leu	Val	Phe	
			340				345						350			
atc	ggc	caa	gcc	atc	gac	ccg	tct	cga	ctg	cac	cga	gaa	ctc	gac	gcg	1104
Ile	Gly	Gln	Ala	Ile	Asp	Pro	Ser	Arg	Leu	His	Arg	Glu	Leu	Asp	Ala	
			355			360						365				
tgt	cta	ctc	acc	aca	gcc	gag	atc	gaa	ctc	ggg	cca	gac	gtg	tgg	acc	1152
Cys	Leu	Leu	Thr	Thr	Ala	Glu	Ile	Glu	Leu	Gly	Pro	Asp	Val	Trp	Thr	
			370			375					380					
acc	tgg	agc	gac	ccc	ctg	ggc	gtc	ggc	tat	acc	gac	cag	acc	gtt	tga	1200
Thr	Trp	Ser	Asp	Pro	Leu	Gly	Val	Gly	Tyr	Thr	Asp	Gln	Thr	Val		
					390				395							

<210> 34  
 <211> 399  
 <212> PRT  
 <213> Rhodococcus erythropolis

<400> 34

Met	Val	Asp	Thr	Arg	Leu	Pro	Val	Thr	Val	Leu	Ser	Gly	Phe	Leu	Gly
1				5					10					15	

Ala	Gly	Lys	Thr	Thr	Leu	Leu	Asn	Glu	Ile	Leu	Arg	Asn	Arg	Glu	Gly
			20					25					30		

Arg	Arg	Val	Ala	Val	Ile	Val	Asn	Asp	Met	Ser	Glu	Ile	Asn	Ile	Asp
		35					40					45			

Ser	Ala	Glu	Val	Glu	Arg	Glu	Ile	Ser	Leu	Ser	Arg	Ser	Glu	Glu	Lys
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



25

50		55		60
Leu Val Glu Met Thr Asn Gly Cys Ile Cys Cys Thr Leu Arg Glu Asp 65 70 75 80				
Leu Leu Ser Glu Ile Ser Ala Leu Ala Ala Asp Gly Arg Phe Asp Tyr 85 90 95				
Leu Leu Ile Glu Ser Ser Gly Ile Ser Glu Pro Leu Pro Val Ala Glu 100 105 110				
Thr Phe Thr Phe Ile Asp Thr Asp Gly His Ala Leu Ala Asp Val Ala 115 120 125				
Arg Leu Asp Thr Met Val Thr Val Val Asp Gly His Ser Phe Leu Arg 130 135 140				
Asp Tyr Thr Ala Gly Gly Arg Val Glu Ala Asp Ala Pro Glu Asp Glu 145 150 155 160				
Arg Asp Ile Ala Asp Leu Leu Val Asp Gln Ile Glu Phe Ala Asp Val 165 170 175				
Ile Leu Val Ser Lys Ala Asp Leu Val Ser His Gln His Leu Val Glu 180 185 190				
Leu Thr Ala Val Leu Arg Ser Leu Asn Ala Ser Ala Ala Ile Val Pro 195 200 205				
Met Thr Leu Gly Arg Ile Pro Leu Asp Thr Ile Leu Asp Thr Gly Leu 210 215 220				
Phe Ser Leu Glu Lys Ala Ala Gln Ala Pro Gly Trp Leu Gln Glu Leu 225 230 235 240				
Gln Gly Glu His Ile Pro Glu Thr Glu Glu Tyr Gly Ile Ser Ser Val 245 250 255				
Val Tyr Arg Glu Arg Ala Pro Phe His Pro Gln Arg Leu His Asp Phe 260 265 270				
Leu Ser Ser Glu Trp Thr Asn Gly Lys Leu Leu Arg Ala Lys Gly Tyr 275 280 285				

Tyr Trp Asn Ala Gly Arg Phe Thr Glu Ile Gly Ser Ile Ser Gln Ala  
290 295 300

Gly His Leu Ile Arg His Gly Tyr Val Gly Arg Trp Trp Lys Phe Leu  
305 310 315 320

Pro Arg Asp Glu Trp Pro Ala Asp Asp Tyr Arg Arg Asp Gly Ile Leu  
325 330 335

Asp Lys Trp Glu Glu Pro Val Gly Asp Cys Arg Gln Glu Leu Val Phe  
340 345 350

Ile Gly Gln Ala Ile Asp Pro Ser Arg Leu His Arg Glu Leu Asp Ala  
355 360 365

Cys Leu Leu Thr Thr Ala Glu Ile Glu Leu Gly Pro Asp Val Trp Thr  
370 375 380

Thr Trp Ser Asp Pro Leu Gly Val Gly Tyr Thr Asp Gln Thr Val  
385 390 395